

Assessment of alternatives to perfluorooctane sulfonic acid (PFOS) in open applications

Summary from the technical paper on the identification and assessment of alternatives to the use of PFOS in open applications
(UNEP/POPS/POPRC.8/INF/17)

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Background

PFOS, its salts and PFOSF

- Production and use restricted through SC (COP4/2009)
- Listed in Annex B with a total of 20 specific exemptions and acceptable purposes
- Based on Decision SC-5/5, a technical paper* was commissioned by POPRC to:
 1. Help the evaluation of use and production and substitution to safer alternatives
 2. Develop recommendations based on the information revealed in the technical paper for consideration at COP6.
 3. Provide information for the review of continued need for exemptions in 2015 (COP7)

* UNEP/POPS/POPRC.8/INF/17

PFOS in open applications

- Open applications – applications with potential exposure to humans and the environment
- No recovery of PFOS and therefore a need for stringent waste management facilities
- Open applications include:
 - aviation hydraulic fluids
 - fire-fighting foams
 - carpets, textiles, leather and upholstery
 - paper and packaging
 - metal plating
 - electrical and electronic parts (solder, adhesives and paints)
 - chemically driven oil production
 - insect baits and insecticides
 - coatings
 - rubber and plastic
- Substitutes for PFOS are available for many applications

PFOS in open applications
- alternatives are available

- Fire-fighting foam
- Insecticides
- Decorative metal plating
- Surface treatment of
 - carpets
 - leather and apparel
 - textiles and upholstery

Fire-fighting foam

- Effective alternatives are available
 - both fluor-containing and fluor-free alternatives
 - short-chain PFAS and fluorinated teleomers (6:2 FTS)
 - F-free alternatives (other surface active compounds)

Alternatives used in AFFF are short-chain fluorteleomer-based

AFFF = aqueous film forming foam (extinguish the fires in flammable liquids)

- Fire-fighting foams were used in the offshore industry and land-based activities such as refineries, defense, aerospace and fire training areas in huge amounts.

Insecticides

– red imported fire ants and termites

- Sulfamide has been used as a insecticide (bait)
- Chemical alternatives
 - short-chain PFAS and fluorteleomers
- Biological control methods (non-conventional)
 - self-sustained biological control agents
 - viruses

Leaf-cutting ants – no good alternatives available

- chemical alternatives (Fipronil and Chlorpyrifos among others)

Metal plating

Decorative- and hard metal plating

- PFOS: surfactant, wetting agent and mist suppressant
- Decorative metal plating:
 - technology applying Cr-III instead of Cr-VI in use in many plants
- Hard metal plating
 - Cr-III does not work
 - substitute PFOS for other suppressing agents (6:2 FTS)
 - closed-loop system using BAT and BEP

Carpets, leather, apparel, textiles and upholstery

- Surface treatment - water- and oil repellency
- Alternatives available:
 - Short-chain fluorotelomer-based
 - Short-chain fluorobutane sulfonyl-based (PFBS)
 - Some countries might also use PFHxS
- Non-fluor alternatives: waxes and silicones
 - water repellency
 - not stain, soil and oil repellency

Information gaps

Alternatives exist but for many applications there are considerable data gaps

- Aviation hydraulic fluids
- Electrical and electronic parts
- Paper and packaging
- Chemically driven oil production
- Coating and coating additives
- Rubber and plastic

POPRC recommendations on alternatives to PFOS in open applications

Decision POPRC-8/8

Liselott Säll, Norway

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- Encourage parties to make use of the information on alternatives to PFOS revealed in the technical paper
 - i. Applications where alternatives are available
 - ii. Some alternatives might be of concern (PFHxS, siloxanes, pesticides)

- Encourage parties to stop using PFOS for the following applications:
 - i. Fire-fighting foam
 - ii. Insecticides for the control of red imported fire ants and termites
 - iii. Decorative metal plating
 - iv. Carpets
 - v. Leather and apparel
 - vi. Textiles and upholstery

- For hard metal plating restrict the use of PFOS to closed-loop systems only following BAT/BEP
- Encourage parties to fill in the information gaps on usage of alternatives and continue to identify and assess alternatives to PFOS and make the information publically available
- Provide information on whether PFOS or alternatives are used for the following applications:
 - i. Aviation hydraulic fluids
 - ii. Chemically driven oil production
 - iii. Electric and electronic parts for some colour printers/copy machines
- Invite parties to undertake studies to obtain information on alternatives to PFOS in the control of leaf-cutting ants



- Questions?